

This listing of the claims will replace all prior versions of claims in the application:

**Listing of Claims:**

13 (currently amended). Method of detecting a welding process voltage detected (27), wherein the welding process voltage (27) between a welding torch (10) and a workpiece (16) is detected, characterised in that comprising the step of performing a calculation of the welding process voltage (27) is performed in real time, taking account of the interference variables, in particular an inductance (28) and a resistance (29) of a welding system, the calculation for determining inductance being performed at specific time intervals during a welding process without the welding process being affected. in accordance with the formula

$$U_{proc}(t) = U_M(t) - (dI(t) * L) - (I(t) * R)$$

~~the definition of the formula being as follows:~~

~~$U_M(t)$  the instantaneous voltage measured at the welding jacks, in particular at the output terminals 31, 32, by a measuring device 28 via measuring lines 29, 30,  $dI(t)$  the instantaneous change in current,~~

~~I(t) the current measured instantaneously at the welding  
jacks,~~

*BE*  
~~R the resistance 29 determined by a static measuring  
process or preset to a known variable,~~

~~L the inductance 28 determined by a static measuring  
process or calculated during the welding process.~~

14 (currently amended). Method as claimed in claim 13,  
~~characterised in that wherein~~ the calculated welding process  
voltage (27) is applied by ~~the~~ a control unit (4) to the  
welding process control.

Claim 15 (canceled).

*Bd*  
16 (currently amended). Method as claimed in claim ~~13~~ 14,  
~~characterised in that wherein~~ the interference variables, in  
~~particular the resistance (29) and/or the inductance (28) of~~  
~~the welding circuit~~ are detected and/or calculated by the  
control unit (4) before the start of the actual welding  
process.

17 (currently amended). Method as claimed in claim 13,  
~~characterised in that wherein~~ a voltage and a current at the  
outputs of the current source (2), ~~in particular at the output~~

~~terminals (33, 34) of the current source (2), are measured by a measuring device (30).~~

B6 18 (currently amended). Method as claimed in claim 13, ~~characterised in that wherein,~~ in order to provide a static calculation of the interference variable of the resistance ~~(29)~~ and the inductance ~~(28)~~ of the hose pack ~~(23)~~ and optionally other ohmic interference variables during a secondary short-circuit prior to the start of the welding process, a current change is imposed on a current curve and the measured voltage is evaluated.

19 (currently amended). Method as claimed in claim ~~10~~ 14, ~~characterised in that wherein,~~ at a predetermined point in time of the current curve, a measurement is taken ~~(4)~~ or the values of the voltage and current detected at the output terminals ~~(33, 34)~~ of the current source ~~(2)~~ by the control unit are used to calculate the resistance ~~(29)~~.

20. Method as claimed in claim 18, ~~characterised in that in order to provide a static calculation of the interference variables, in particular the resistance (29) and the inductance (28) of the hose pack (23), wherein~~ the lines of the hose pack (23) are short-circuited or a short-circuit is produced between

the electrode of the welding torch ~~(10)~~ and the workpiece ~~(16)~~ with the supply lines ~~(7)~~ of the hose pack ~~(23)~~ connected thereto, taking account of other interference variables, in particular of the welding torch ~~(10)~~.

Claim 21 (canceled).

Claim 22 (canceled).

B7 23 (currently amended). Method as claimed in claim 13, ~~characterised in that~~ wherein a process control or a welding process control is performed during the entire pulse duration.

24. Method as claimed in claim ~~13~~ 14, ~~characterised in that~~ wherein the interference variables are calculated by the control unit ~~(2)~~ by means of software using the detected values and a predetermined calculation program.